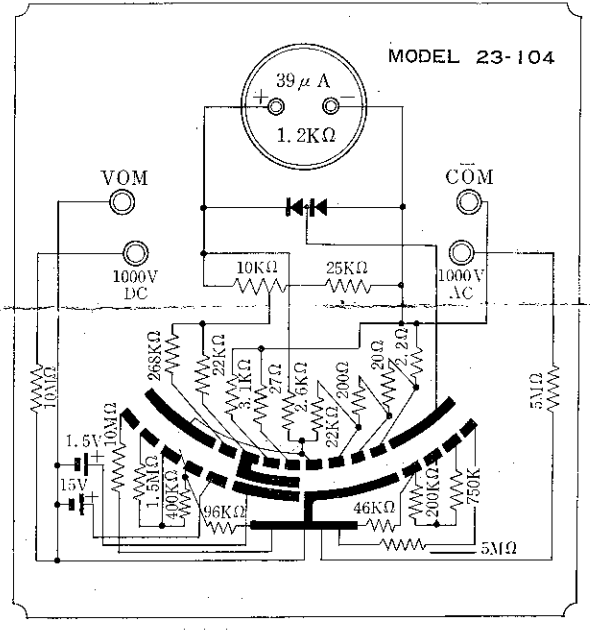
SCHEMATIC DIAGRAM



PAT 202179

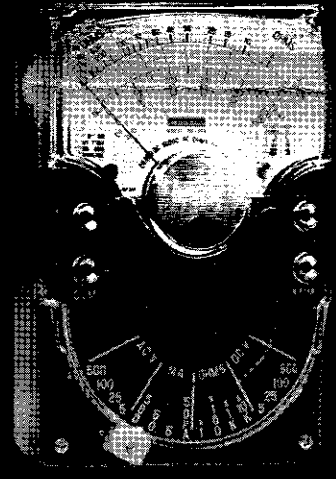
JAPAN

MIDLAND

MODEL 23-104 MULTIMETER

WITH

THERMAL OVERLOAD PROTECTION



OWNER'S GUIDE

MIDLAND INTERNATIONAL CORPORATION

MODEL 23-104 MULTIMETER
OVERLOAD PROTECTED

RANGES:

DC Voltage : 0-5-25-100-500-1000V (20,000 ohms/V.)
AC Voltage : 0-5-25-100-500-1000V (10,000 ohms/V.)
DC Current : 0-50μA, 0-5-50-500mA.
Resisttance : 0-6K-600K-6Meg-60Meg.
Decibels : -20 db to + 62 db in 5 ranges

OPERATING INSTRUCTIONS

CAUTION:

HIGH VOLTAGE CIRCUIT, BOTH DC AND AC, ARE VERY DANGEROUS AND SHOULD NOT BE TREATED LIGHTLY. TAKE UTMOST CARE WHEN MEASURING VOLTAGES AND CURRENT IN THESE CIRCUITS.

DC Voltages up to 500 Volts:

1. Insert the red test lead in the "VOM+" jack and the black test lead in the "COM−" jack.
2. Select the range by turning the switch to one of the four settings marked DC V.
3. The test leads are connected across the load or the source under test.
4. Observe the proper polarities of the test leads.
5. If the voltage in the circuit under test is unknown, set the selector at a high range and work down to obtain readings reasonably high on the scale.
6. The DC voltages are read on the scale marked "DC V mA". For the 5 volts range, use the 0-500 marking and divide the reading by 100.

DC Voltages over 500 Volts.

1. Set the selector to 500V.
2. Insert the red test lead in the "VOM+" jack.
3. Connect the test leads across the load and use the 0-100 scale and multiply the reading dy 10.

DC Current:

1. The DC current measurements are made by connecting the test leads in series with the circuit under test. Before inserting the tester in the circuit, make certain the power is turned off and the proper polarities are observed.
2. Insert the red test lead in the "VOM+" jack and the black test leads in the "COM−" jack.
3. For currents up to 50μA, set the selector to 50μA and read the 0-500 scale dividing by 10 to obtain microamperes.

AC Voltages:

1. Insert the red test lead in the "VOM+" jack and the black test lead in the "COM−" jack.
2. Select the range by turning the selector to the "ACV" positions.
3. For measurements, connect the test leads across the load under test. The polarities are not important.
4. There are two scale markings for the AC voltages, 0-5 and 0-25 up. Use the 0-5V scale for 5V range only. The 0-25V up markings are for the 25,100,500 and 1,000 volts ranges.

Resistance:

1. The resistance of resistors, coils, etc., can be measured up to 60Meg ohms in 4 ranges.
2. Insert the test leads in the "VOM +" jack and the "COM −" jack.
3. Select the range by turning the selector to RX1 or RX 10K (K−1000).
4. SHORTING TEST. Check the ZERO OHM setting by shorting the test lead tips and adjusting the "OHM ADJ" control located on the left side of case. The meter pointer must be set at the "0" on the OHMS scale, which is the outer arc.
5. Connect the leads across the resistor under test, read the scale and apply the proper multiplier, X100 X1K, and X10K.
6. When making resistance measurements of a component wired in a circuit, make certain that the power is turned off and also that one end is free.
7. If SHORTING TEST fails to bring the pointer to "0" on the OHMS scale, replace the internal batteries, 1.5 Volt penlight cell and 15V battery.

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